



Fatty acid composition, conjugated linoleic acid isomers and cholesterol in beef from crossbred bullocks intensively produced and from Alentejana purebred bullocks reared according to Carnalentejana-PDO specifications

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Abstract

The purpose of this study was to characterise and compare the nutritional value of Portuguese Carnalentejana-PDO beef, obtained from Alentejana purebred bullocks reared in a semi-extensive system, with the meat from Alentejana × Charolais crossbred bullocks produced in a conventional intensive concentrate-based system. In addition, seasonal changes in Carnalentejana-PDO beef quality were assessed, by analysing meat samples from animals slaughtered in early autumn and late spring. The results showed that beef-PDO has different intramuscular fat characteristics in comparison with meat from crossbred bullocks fed intensively with concentrate. However, the finishing period of Alentejana purebred bullocks with concentrate seems to attenuate most of the typical grass-fed characteristics of meat fat. Nevertheless, from a human nutrition perspective, Carnalentejana-PDO beef seems to be healthier than that from intensively reared animals since it has a lower $n-6/n-3$ ratio, although always above the recommended guidelines for human diet, and higher proportions of c9,t11 conjugated linoleic acid (CLA) isomer and total CLA relative to saturated fatty acids plus total cholesterol (CLA/SFA + CHR). Furthermore, no seasonal variation in the nutritional quality of beef-PDO was apparent. Taken together, the data indicate that Carnalentejana-PDO beef is of greater nutritional value than intensively produced beef from crossbred bullocks throughout the year.

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Abbreviations: CHR, cholesterol; CLA, conjugated linoleic acid; DAD, diode array detector; FAME, fatty acid methyl esters; FID, flame ionization detector; h, hypocholesterolaemic fatty acids; H, hypercholesterolaemic fatty acids; IP, intensively produced; LT, *longissimus thoracis*; MUFA, mono-unsaturated fatty acids; PDO, protected designation of origin; PUFA, polyunsaturated fatty acids; SFA, saturated fatty acids; ST, *semitendinosus*; TFA, *trans* fatty acids.

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